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Abstract theory of hybridizable discontinuous Galerkin methods for second-order quasilinear elliptic problems

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Abstract

An abstract theory for discretizations of second-order quasilinear elliptic problems based on the mixed-hybrid discontinuous Galerkin method. Discrete schemes are formulated in terms of approximations of the solution to the problem, its gradient, flux, and the trace of the solution on the interelement boundaries. Stability and optimal error estimates are obtained under minimal assumptions on the approximating space. It is shown that the schemes admit an efficient numerical implementation. © 2014 Pleiades Publishing, Ltd.

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Keywords

discontinuous Galerkin method, error estimate, hybridizable discontinuous Galerkin schemes, LBB condition, mixed method, quasilinear elliptic equations